UNITED STATES CONTINUING UTILITY PATENT APPLICATION
under 37 C.F.R. § 1.53(b)

Atty. Docket No. 3432.73540

Assistant Commissioner of Patents
Box Patent Applications
Washington, D.C. 20231

Enclosed herewith is a continuing patent application and the following papers:

First Named Inventor (or application identifier):   Christopher J. Ordish

Title of Invention: OFFER MATCHING SYSTEM

■   Continuation
☐   Divisional
☐   Continuation-in-Part

of prior application No. _08/364,009_ , filed _December 27, 1994_

1.   ■   Specification _40_ pages (including specification, claims, abstract) / _20_ claims (_1_ independent)

2.   ■   Declaration/Power of Attorney:
■   Copy from Prior Application (for continuation or divisional application)
☐   Newly Executed Declaration (for CIP application)
☐   Deferred under 37 C.F.R. § 1.53(f)

☐   Deletion of Inventor(s) - Signed statement attached deleting inventor(s) named in the prior application, see 37 C.F.R. §§ 1.63(d)(2) and 1.33(b)

■   Incorporation by Reference - The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein

3.   ■   _5_ Distinct sheets of ■ Formal ☐ Informal Drawings

4.   ■   Preliminary Amendment

5.   ☐   Information Disclosure Statement
☐   Form 1449
☐   A copy of each cited prior art reference

6.   ■   Assignment

☐   Assignment with Cover Sheet attached
■   Assignment filed in prior application. Application assigned to: **Reuters Limited**

7.   ■   Priority is hereby claimed under 35 U.S.C. § 119 based upon the following application(s):

UNITED STATES CONTINUING UTILITY PATENT APPLICATION
under 37 C.F.R. § 1.53(b)

Country	Application Number	Date of Filing (day, month, year)
Great Britain	9027249.3	17, 12,90
Great Britain	9104121.0	27, 2, 91
Great Britain	91306146.1	5, 7, 91

8. ■ Priority Document(s)
   - ■ was filed in prior application
   - ☐ is attached
   - ☐ will be submitted prior to or concurrently with the payment of any issue fee for the instant application

9. ☐ Small Entity Statement
   - ☐ Small Entity Statement was filed in prior application, Small Entity Status is still proper and desired
   - ☐ is attached
   - ☐ is no longer claimed

10. ☐ Microfiche Computer Program (Appendix)

11. ☐ Nucleotide and/or Amino Acid Sequence Submission
    - ☐ Computer Readable Copy
    - ☐ Paper Copy (identical to computer copy)
    - ☐ Statement verifying identity of above copies

12. Calculation of Fees:

FEES FOR	EXCESS CLAIMS	FEE	AMOUNT DUE
Basic Filing Fee (37 C.F.R. § 1.16(a))			$790.00
Total Claims in Excess of 20 (37 C.F.R. § 1.16(c))	0	22.00	$0.00
Independent Claims in Excess of 3 (37 C.F.R. § 1.16(b))	0	82.00	$0.00
Multiple Dependent Claims (37 C.F.R. § 1.16(d))	0	270.00	$0.00
Subtotal - Filing Fee Due			$790.00
		MULTIPLY BY	
Reduction by 50%, if Small Entity (37 C.F.R. §§ 1.9, 1.27, 1.28)	0		$0.00
TOTAL FILING FEE DUE			$790.00
Assignment Recordation Fee (if applicable) (37 C.F.R. § 1.21(h))	0	40.00	$0.00
GRAND TOTAL DUE			**$790.00**

UNITED STATES CONTINUING UTILITY PATENT APPLICATION
under 37 C.F.R. § 1.53(b)

13.   PAYMENT is:

■   <u>included</u> in the amount of the GRAND TOTAL by our enclosed check. A general authorization under 37 C.F.R. § 1.25(b), second sentence, is hereby given to credit or debit our Deposit Account No. 19-0733 for the instant filing and for any other fees during the pendency of this application under 37 C.F.R. §§ 1.16, 1.17 and 1.18

☐   <u>not included,</u> but deferred under 37 C.F.R. § 1.53(f).

14.   All correspondence for the attached application should be directed to:

Banner & Witcoff, Ltd.
1001 G Street, N.W.
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Telephone: (202) 508-9100
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15.   Other: _____

Date: January 23, 1998   By

                                       Joseph M. Potenza
                                       Reg. No. 28,175

JMP/CRG/dah

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF	)	
	)	
ORDISH ET AL.	)	GROUP ART UNIT: (Unassigned)
	)	
SERIAL NO.: (Unassigned)	)	EXAMINER: (Unassigned)
	)	
FILED: HEREWITH	)	
	)	ATTY. DKT. NO. 3432.73540
FOR: OFFER MATCHING SYSTEM	)	

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Please preliminarily amend the above-captioned application as follows:

IN THE SPECIFICATION:

On Page 1, line 3, after 357,036, insert -- , now U.S. Patent No. 5,077,665; issued

December 31, 1991;--;

delete "357,748", insert --357,478, now U.S. Patent No. 5,136,501, issued August 4,

1992;

On Page 2, line 5, change "related" to read --relates--;

On Page 5, line 15, change "3,745,800" to read --3,795,800--;

line 18, change "357,748" to read --357,478--;

after May 26, 1989, insert --now U.S. Patent No. 5,136,501, issued August 4, 1992;

On Page 7, line 1, after Patent insert --Application Serial--;

delete "357,748", insert --357,478, now U.S. Patent No. 5,136,501, issued

August 4, 1992--;

On Page 8, line 21, after transaction insert --.--;

On Page 9, line 26, after U.S. insert --Patent Application--;

delete "357,748", insert --357,478, now U.S. Patent No. 5,136,501, issued August

4, 1992--

On Page 12, line 7, after U.S., insert --Patent Application--;

delete "357,748, insert --357,478, now U.S. Patent No. 5,136,501, issued August

4, 1992,--;

On Page 17, line 26, after U.S., insert --Patent Application--;

delete "357,748, insert --357,478, now U.S. Patent No. 5,136,501, issued August

4, 1992,--

On Page 19, line 8, change "submits" to read --submitted--;

On Page 21, line 22, delete "357,748", insert --357,478, now U.S. Patent No. 5,136,501,

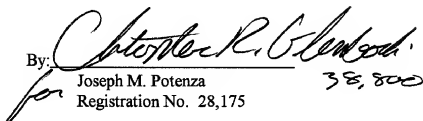issued August 4, 1992--;

IN THE CLAIMS:

Cancel claims 21-42.

REMARKS

Applicants request that the Examiner consider the above amendments before action on this application.

Respectfully submitted,

By: _____

Joseph M. Potenza
Registration No. 28,175

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Dated: January 23, 1998

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OFFER MATCHING SYSTEM

In matching systems such as the system described in EP-A-0399850, various clients are connected to a central computer system and various offers to buy or sell from clients are matched by 5 the central system. Since the transmission channels between clients and the central system are not completely error free, deals are only completed when an offer to sell has been made by one client, a matching offer to buy has been made by another client, details have been sent to each client of the other party to the deal and confirmation has been 10 received at the central system from each client that the details of the other party and the deal have been received.

There is a problem in this system when one communication channel fails since although confirmation is sent to one client and acknowledged, the other party does not receive details of the deal 15 and/or his acknowledgement does not reach the central system. If the communication channel which fails is that of the purchaser and failure occurs after he has made his offer but before he receives an acknowledgement, the seller will have offered to sell, will have received details of the buyer from the central system and will have 20 acknowledged to the central system that all details of the deal have been recorded, so that as far as the seller is concerned, the deal is complete. The buyer will have received details of the offer from the central system and have made his offer to buy but due to the channel failure he will not have received any details of the offerer or 25 confirmation that the deal is complete. He will be uncertain of his position and may assume that his offer to buy has not been accepted and consider the deal cancelled. This will leave the central system and the buyer at odds, and if the terms of the contract are appropriate, it may be that the central system has to purchase the items from the 30 seller and attempt to sell them in the market itself, possibly at a loss, if the buyer has considered the deal cancelled.

The system described above has various checking devices including a time delay device in the central system to interrogate each client if the client does not confirm receipt of information which has been sent to it within a certain period. In response to the time lapse
5 signal at the central system, further interrogations of the client may be made but if no acknowledgement is received, then alarms may be made to alert an operator that enquiries outside the matching system have to made to sort out the confusion. If the communication channel to the client only failed after he had received details of the transaction but
10 before his acknowledgement was sent out, then the presence in his memory store of the deal details should be sufficient to complete the deal but if the communication channel failed before he received details of the bargain, then the central system may be at risk in having to find an alternative buyer.

15 The present invention attempts to overcome this problem by removing the time lapse generator from the central system and providing one in each client station. If a client is making an offer to sell, his offer to sell is transmitted to the central station as before and when a deal is matched, details of the buyer and the amount offered for
20 purchase are sent back to the selling client who acknowledges in the normal way. The time lapse is generated from the time the deal details are received from the host computer or the acknowledgment is sent back to the central system and will in due course generate an alarm if within a predetermined time lapse period an acknowledgment is not
25 received back from the other party to the deal through the central system that the acknowledgement has been received. Thus not only is the time lapse generator moved from the central system to the client's station, but also the client's data processing system requires means not only to acknowledge receipt of details of the deal but also means
30 responsive to the acknowledgement from the other party to the deal of receipt of the deal details, which latter means stops operation of the time lapse generator. If the time lapse generator is not stopped within a predetermined time, the alarm is generated and the deal is

denoted as suspect, requiring further checking with the other party before it can be considered binding. The system according to the invention thus provides means to alert the operator to make further checks so that any failures in the communication channels will not lead
5 to misunderstandings.

An example of the invention will now be described with reference to the accompanying message diagram. Client A makes an offer to sell one million items at a given price and this offer is transmitted as message 1 to the central system known as the host
10 computer. This offer is broadcast as message 2 to other clients including client B by the host computer. If client B makes an offer as message 3 to buy one hundred thousand items at that price, the host computer sends a message 4 to client A that he has sold one hundred thousand items to client B at the offered price. Client A records this
15 deal in a non-volatile memory and sends an acknowledgement 5 to the host computer of his receipt. Similarly, the host computer sends to client B a message 6 that he has bought one hundred thousand items from client A at the offered price and this message is also stored in the non-volatile memory of client B and an acknowledgement 7 sent back to
20 the host computer. These acknowledgements are recorded in the host computer and transmitted as messages 8 and 9 respectively to the opposite parties so that, provided the communication channels remain open, each client has made an offer, has received details of the deal and acknowledged it and in due time received acknowledgement that the
25 other party has acknowledged receipt of the deal. The deal details stored on the non-volatile memory of the client computer are then processed for updating item holdings and accounting. This interchange of messages takes about 2 seconds. The timers can be started in response to the generation of the acknowledgement messages 5 and 7 or
30 in response to the receipt of the deal details 4 and 6, as desired.

If the full range of acknowledgements is not received, a time lapse generator which is started when details of the deal are received

at the client's station continues to time out and after 15 seconds will
alert that client that the bargain, although stored in his memory,
cannot be considered as complete because the other party has not
acknowledged in due time.   It is then up to that client to contact the
5 other party to check if he has received details of the bargain, in
which case the deal can be considered as complete but if the other
client has not received details of the bargain, then the deal should be
considered cancelled.   The client can make his first communication
through the host computer and the standard communication channels or a
10 back-up communication system which may be in operation but otherwise
can use standard direct communication channels . such as telephone,
facsimile or telex in an attempt to complete the deal.

The time lapse generator in the client's computer can be used
to generate interrogation signals automatically if the confirmation
15 from the other party has not been received within a certain period
before alerting the operator that the deal is in doubt but it has been
found useful to alert the operator at the earliest possible moment
since he is better able to decide the correct course of action in
response to the circumstances.

20   The time lapse generator may be adjustable so that the
operator will be alerted at a time which can be adjusted to have a
value other than the 15 seconds mentioned above.   Similarly, the time
lapse generator can be adjusted to send automatic interrogation signals
at different times if this provision is required. If the time selected
25 is too high, the system will spend too long waiting for confirmations
and its capacity will be reduced.   If it is too low, there may be many
false alarms.   In this case a confirmation received after the time
selected may be used to generate a late confirmation message which
cancels the operator alerting and interrogation signals.
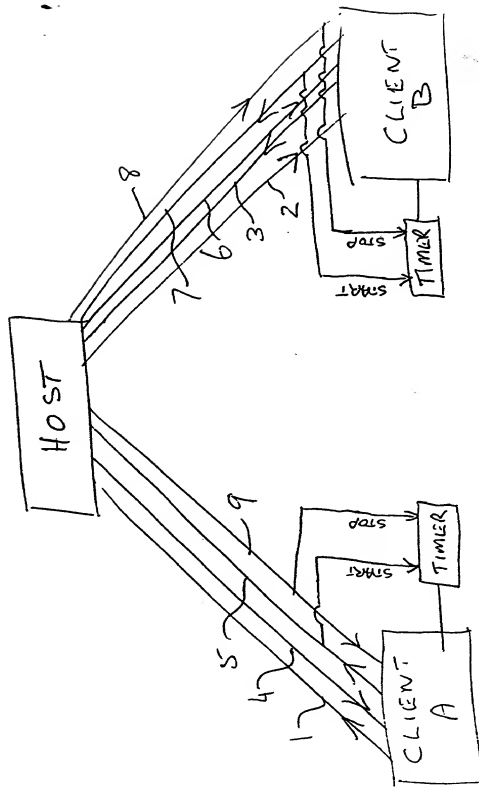
TITLE: OFFER MATCHING SYSTEM

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Cross-Reference to Related Applications

This application is related to the commonly owned
co-pending U.S. Patent Applications entitled "Distributed
Matching System," filed May 25, 1989, bearing U.S. Serial No.
357,036; "Distributed Matching System Method," filed May 25,
1989, bearing U.S. Serial No. 357,484; "Anonymous Matching
System," filed May 26, 1989, bearing U.S. Serial No, 357,748;
"Integrated Trading System," filed November 22, 1989, bearing
U.S. Serial No. 440,971; and "Integrated Trading System
Method," filed November 22, 1989, bearing U.S. Serial No.
441,156; and U.S. Patent No. 5,003,473, issued March 26, 1991

and entitled "Trading Ticket Output System," the contents of all of which are specifically incorporated by reference herein in their entirety, and is an improvement thereon.

Technical Field

The present invention related to matching systems for effectuating trades of trading instruments through automatic matching in which buyers and sellers who are willing to trade with one another based on specified criteria may automatically trade when matching events occur satisfying these criteria, and more particularly to improvements in such matching systems in which risks are minimized as to losses due to broken trades.

Background Art

Information retrieval systems for financial information, such as stock market type of information and money market information, normally employ a transfer of data in a high-performance, real-time information retrieval network in which update rates, retrieval rates and subscriber and/or user population are generally very high. An example of such a system is assignee's REUTER MONITOR DEALING SERVICE which is used in the foreign exchange or money market. Such systems, while providing rapid video conversation capability, and the ability, in the instance of Reuters' MONITOR DEALING SERVICE, to display a message when a connection is lost during a negotiated trade, are not anonymous systems nor do they provide

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for automated anonymous trading such as is possible in a
matching system. Of course, conversational dealing systems
have their place in the market and serve particular needs where
appropriate. However, anonymous matching systems are also
often desired and, by their very nature, do not normally employ
a conversation capability since the parties to the transactions
are unknown until the transaction has been completed. Examples
of satisfactory prior art video conversational systems for use
in connection with trading of financial information are
disclosed in commonly owned U.S. Patent Nos. 4,531,184;
4,525,779 and 4,404,551, by way of example. In this regard,
U.S. Patent No. 4,525,779 discloses a feature termed a DEAL KEY
for providing a visual confirmation signal during a negotiated
trade but does not concern itself with the problems of
anonymous matching trades and the types of confirmations
required therein to complete a deal in which risks are
minimized as to losses due to broken trades.

     Prior art examples of matching systems used in
connection with the trading of trading instruments are
disclosed in U.S. Patent No. 4,412,287, and U.K. Patent Nos.
1,489,571 and 1,489,573, all of which disclose automatic stock
exchanges in which a computer matches buy and sell orders for a
variety of stocks; U.S. Patent No. 3,573,747, which discloses
an anonymous trading system for selling fungible properties
between subscribers to the system; U.S. Patent No. 3,581,072,
which discloses the use of a special purpose digital computer

for matching orders and establishing market prices in an
auction market for fungible goods; U.S. Patent No, 4,674,044,
which discloses an automatic securities trading system; and
U.S. Patent No. 4,903,201, which discloses an automated
computerized, open outcry exchange system for trading commodity
contracts through automatic matching. Other such prior art
matching systems are SOFFEX, such as described in the February
15, 1988 issue of _Asian Finance_ at pages 22-23 TAFEX; such as
described in the May 1976 issue of _Institutional Investor_ at
pages 32-36; and VSE's MATCHMAKER, described in the August 4,
1988 issue of _Competing Canada_, at pages 12, 42. However, none
of these prior art matching systems implements or suggests the
use of risk controls to minimize risks as to losses due to
broken trades, which are situations in which you are not
entirely sure which trades have been completed or not due to a
failure somewhere in the system, such as a network failure, a
control system or host failure, or a keystation failure, all of
which could result in one party thinking a trade or match had
occurred while the counterparty was completely unaware of the
trade. Applicants' assignee has recently overcome some of
these problems in matching systems which it has introduced
under the names of GLOBEX, such as described in the February
13, 1989 issue of the _New York Times_ at pages D1, D6, and
REUTER DEALING 2000 Automatic FX Matching network. However,
these systems have involved a transaction desk in which trades
had to be "voted upon" automatically at a site remote to the

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host computer and to the individual keystations before
ultimately becoming completed trades. Such an arrangement
lacks many of the advantages of the invention herein,
particularly in the type of dynamic environment in which such
matching systems are normally employed. Moreover, no prior art
distributed anonymous matching systems are known to applicants
in which broken trade alerts are timely provided when a system
failure occurs after a match which prevents immediate
notification to all counterparties of confirmation of the
trade. Furthermore, no such prior art matching systems are
known to applicants in which the timing of responses to
positive match acknowledgements are utilized by the keystations
attempting to avoid broken trades. This is so despite the well
known monitoring of computer signals to detect communication
faults, such as disclosed in U.S. Patent Nos. 3,745,d00;
4,276,593; 4,625,276; 4,789,928; and 4,713,811.

Nevertheless, in anonymous matching systems, such as
described in U.S. Patent Application Serial No. 357,7n8, filed
May 26, 1989, and incorporated by reference herein, there can
be a problem when one communication channel fails during the
matching transaction. It may occur that although confirmation
is sent to one keystation or counterparty and acknowledged, the
other counterparty to the matching transaction which occurred
at the host does not receive details of the contract and/or his
acknowledgement does not reach the host computer or central
system. If the communication channel which fails is that of

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the purchaser and failure occurs after he has made his offer to
buy but before he receives an acceptance, the seller will have
offered to sell, will have received details of the contract
from the host or central system and will have acknowledged
receipt of the host or central system so that as far as the
seller is concerned, the contract or deal is complete. The
buyer will have received details of the offer from the host or
central system and have made his acceptance or an alternative
offer to buy but due to the channel failure he will not have
received any details of the contract. He will be uncertain of
his position and may assume that his acceptance was too late or
his offer to buy has not been accepted and consider the deal or
contract not made. This will leave the host or central system
and the buyer at odds, and if the terms of business are
appropriate, it may be that the host or central system has to
purchase the items from the seller and attempt to sell them in
the market itself, possibly at a loss, if the buyer has
considered the contract not made.

The present invention attempts to overcome these
problems of the prior art by providing a time lapse generator
or trade status timing system at each keystation. If desired,
a time lapse generator can also be provided at the host or
central station, for timing receipt of match acknowledgement
signals after match notification by the host. If a client or
keystation is making an offer to sell, his offer to sell is
transmitted to the host computer or central station as in the

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aforementioned U.S. Patent No. 357,748, by way of example, and
when a deal is matched, details of the amount offered for
purchase are sent back to the selling client or keystation who
provides a match acknowledgement message to the host computer.
The time lapse is generated at the client or keystation
following the receipt of a message from the host or central
system and will in due course generate an alarm if within a
predetermined time lapse period a further message is not
received back from the host or central system indicating a
confirmed trade, such as along with a ticket generation
message. The time lapse is preferably started by the receipt
and storage of a message but it could be started by the
transmission of an outgoing message. If the time lapse
generator is not stopped within a predetermined time, the alarm
is generated and the keystation is alerted that the deal is
denoted as suspect, requiring further checking with the other
party or with the host or central station before it can be
considered binding.

It may be arranged in the improved matching system of
the present invention that the identity of the other party to
the matching transaction is not revealed at the initial message
sending stage. In such an instance, when an alarm is raised,
the client or relevant keystation is simply informed that his
deal is not fully confirmed and that further checking is
required. Since he does not know the identity of the other
party, he clearly cannot check with him but instead can check

with a central enquiry station who would then check with the
other party and report back to the enquiring party that the
deal is either confirmed or cancelled. It could also be
arranged, if desired, in the improved matching system of the
present invention, that the identity of the other party is
transmitted in the initial message but is simply kept hidden by
the display apparatus at the client's keystation until full
confirmation is achieved. This latter approach would
preferably avoid any problems of a client adopting different
modes of enquiry according to the identity of his possible
buyer or vendor. In the anonymous system to be described
herein by way of example, the details of the other party are
only displayed at the final confirmation of the bargain or
trade.

        As will be described hereinafter, the improved
matching system of the present invention overcomes the
disadvantages of the prior art in minimizing risks as to losses
due to broken trades, such as by ensuring that the occurrence
of automatically confirmed trades is dependent on match
acknowledgement from all counterparties to the matching trade,
and by monitoring trade status of matching transactions

                    Disclosure of the Invention

        An improved matching system for trading instruments in
which the occurrence of automatically confirmed trades is
dependent on match acknowledgement from all counterparties to

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the matching trade. In the system of the present invention, bids for the trading instruments which may be any type of trading instrument such as foreign exchange, stocks, bonds, commodities future contracts, etc., are automatically matched against offers for given trading instruments for automatically providing matching transactions in order to provide confirmed trades for the given trading instruments. The system comprises a host computer or central station for matching like bids and offers provided thereto in accordance with a predetermined matching criteria, a transaction originating keystation or client for providing a bid on a given trading instrument to the system for providing a potential matching transaction, a counterparty keystation or client for providing an offer on the given trading instrument involved in the potential matching transaction, and a network or communications link for interconnecting the host computer, the transaction originating keystation, and the counterparty keystation in the system for enabling data communications therebetween. The host computer comprises match notification data message generation means for providing a match notification data message to the transaction originating keystation and the counterparty keystation via the network in response to the occurrence of a matching transaction at the host computer, which is the central location at which matches automatically take place in accordance with the predetermined matching criteria, such as described in the aforementioned U.S. Serial No. 357,748. The match notification

data message comprises an unconfirmed matching transaction for the given trading instrument, which is an indication that a match has occurred but that the deal has not been confirmed or completed since all counterparties to the deal have not yet been notified. Match acknowledgement data message generation means are located at each of the keystations for respectively providing a match acknowledgement data message to the host computer via the network in response to receipt of the match notification data message by the transaction originating keystation means and the counterparty keystation, respectively, so that confirmation of the trade, and ultimate ticket generation, can occur. The host computer further comprises confirmed trade data message generation means for providing a confirmed trade data message to the transaction originating keystation and the counterparty keystation via the network in response to receipt of the match acknowledgement data messages from both the transaction originating keystation and the counterparty keystation. The transaction originating keystation and the counterparty keystation each further comprise trade status timing means for timing receipt of the confirmed trade data message by the respective keystation for providing a trade status display at the respective keystation based on the timed receipt of the confirmed trade data message. The trade status timing arrangement is such that an alarm condition is provided to the keystation when the confirmed trade data message is not received within a

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predetermined time interval, a confirmed trade status display
is provided at the keystation if this message is received
within this timed interval, and a late confirmed trade status
display is provided if this message is received after this
timed interval. During this time interval, until a confirmed
trade occurs, an unconfirmed trade status display is provided.
The host computer may also employ a timing arrangement for
timing receipt of the match acknowledgement data messages from
the keystations in order to provide an alarm condition to the
respective keystation if a match acknowledgement data message
has not been timely received from the other party to the trade.

BRIEF DESCRIPTION OF THE DRAWINGS

Examples of the invention will now be described with
reference to the accompanying drawings in which:

Figures 1 and 8 are diagrams of a central station with
two client keystations, by way of example, showing the message
between, and operations at, each keystation in diagrammatic
form in connection with a typical anonymous matching
transaction, and

Figures 2 to 7 are message flow charts for various
events which take place in the systems of FIGS. 1 and 8 in
arriving at a confirmed trade in which risks are minimized as
to losses due to broken trades.

BEST MODE FOR CARRYING OUT THE INVENTION

Referring now to the drawings in detail, and initially to FIGS. 1 and 8, the improved matching system of the present invention is shown in diagrammatic form. In this regard, the system of the present invention is generically illustrated in FIG. 1 and is further illustrated, by way of example, in FIG. 8, as an improvement over the anonymous matching system described in U.S. Serial No. 357,748, the contents of which are specifically incorporated by reference herein in their entirety. In the message diagram of Figure 1, various messages are shown as being transmitted between stations in a typical transaction, with the other stations in the network having been omitted for purposes of clarity. Each station can be considered to have a signal terminal S and a message terminal T for each message. For a transmitted message, the operator of the station conventionally causes a signal to be applied to the signal terminal and this causes the message to be conventionally transmitted from T. For a received message, the message is conventionally applied to T and this causes a command signal to be conventionally generated at S. Separate terminals and message lines are shown for each message, but in practice a single communication channel between the host and a client or keystation will suffice, and separate terminals for each message may not be necessary since the station will, in practice, conventionally receive a message and detect which

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type of message it is and generate appropriate command signals and apply them to appropriate devices at that station. For ease of understanding, it is convenient to illustrate the system with a plurality of message lines and terminals, even though they may not be separately present in practice.

The connection and operation of the system will generically be described with reference to the situation in which client A (KS A) makes an offer to sell one million of a given trading instrument at a given price and this offer is transmitted as message 1 to the central system known as the host computer 200. This offer is anonymously broadcast as message 2 to all clients or keystations, including client A (KS A) who made the offer and client B (KS B), by the host computer 200. If client B does not wish to buy the full one million of the given trading instrument but makes a counter offer as message 3 to buy one hundred thousand of the trading instrument at that price, the host computer sends a message 4 to client A (KS A) that he has sold one hundred thousand of the trading instrument to client B at the offered price and it sends message 6 to client B (KS B) that he has bought that amount.

The receipt of message 4 at terminal T4, in conventional fashion, prompts a command signal at terminal S4 which is fed to two locations. The first location is a conventional data storage device S which stores the message, and after storage causes the sending of a match acknowledgement message 5 from terminal S5 to the host computer 200 of the

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receipt of the message at client A (KS A). The second location
is the timer T which is started. These procedures are
diagrammatically indicated by connections in Figure 1, with the
match acknowledgement procedure being illustrated by the flow
chart of Figure 2.

Similarly message 6 received at T6 at client station B
(KS B) is conventionally fed to a corresponding conventional
data storage device SB and to timer TB from terminal S6; the
stored message from SB is returned in a match acknowledgement
at S7 and sent back to the host computer 200 as message 7 from
terminal T7.

As will be described later, messages 5 and 7 at the
host computer 200 preferably prompt the transmission of
confirmed trade acknowledgement messages 8 and 9 to the client
keystations KS B and KS A, respectively.

The timers TA and TB preferably have 15 second
periods, by way of example, although any other desired timing
period may be chosen. At client station A (KS A), if a
confirmed trade message 9 is received within this predetermined
period, it simply conventionally causes a conventional store
and print device (SP) and/or display 202, 204 to store and
print the bargain or trade as confirmed and/or to display a
confirmed trade status message on the display 202, 204 at the
respective keystations KS A, KS B. If the timer reaches the
end of its predetermined period before a confirmed trade
message 9 has been received, then, preferably the time-out

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signal is fed firstly to the store and print device (SP) and/or
display 202, 204, where it causes the device to store and print
and/or display the trade as "unconfirmed" and secondly to the
set status device where the status is set to "unconfirmed"
which activates an associated alarm to warn the client at the
appropriate keystation of the unconfirmed trade, as shown by
way of example, in the connections of Figure 1 and the message
flow chart of Figure 3. If in the above example, the
"confirmed trade" message is received after the end of the
predetermined 15 second period, the message preferably acts as
described above when the message is received within the
predetermined 15 second period, but also resets the 'set
status' device from "unconfirmed" to "confirmed" which
de-activates the alarm and causes a "late confirmed trade"
message to be displayed at 202, 204. This is shown by way of
example in the message flow chart of Figure 4.

At the host computer 200, if desired, an optional
checking system may be provided. In such an instance, the
receipt of a message 3 from client B (KS B) offering to buy
certain trading instruments at the offered price will prompt a
command signal on terminal S3 to operate a timer and also send
match notification signals 4 and 6 to the respective clients or
keystations via terminals S4, T4, S6 and T6. This is shown by
connections in Figure 1 and, by way of example, is illustrated
by the message flow chart of Figure 5. The match
acknowledgement signals 5 and 7 which are received back from

the client keystations prompts corresponding command signals at
terminals S5 and S7 which will be passed to the match
notification store. If the trade has not yet been acknowledged
by either party, the first signal preferably causes the store
to change to the state of having been acknowledged by one
party. If it is already in that state, the receipt of the
signal will preferably have three functions; namely, to stop
and cancel the timer, to declare the match as fully
acknowledged at the host computer 200 and to send confirmation
messages 8 and 9 to the respective client keystations via
terminals S8, T8, S9 and T9 of a "confirmed trade." This is
shown by way of example, in the connections of Figure 1 and the
message flow chart of Figure 6.

        If the timer at the host 200 is not cancelled and
reset within a predetermined time, such as preferably 60
seconds, by way of example, a time-out signal with two
functions is preferably generated; namely, one to cancel the
timer, and the second to activate an alarm A and declare the
match as "un-acknowledged" at the host 200. The
"un-acknowledged" declaration may, if desired, prompt an
operator at the host 200 to take action to check with the
respective clients or counterparties to the trade, or the
checking may be left to the clients 5 or counterparties to the
trade to put in hand themselves, either directly between
clients, if they have been made aware of the identity of the
other party to the trade or match, or else through the medium

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of the host 200 if the identity of the other party has not yet been revealed. This is shown, by way of example, in the message flow chart of Figure 7.

When the clients or counterparties remain unidentified to each other until the match is made and acknowledged, message 4 preferably only contains details of the amount purchased and does not identify the buyer, the details of the buyer preferably only being included in message 9. If desired, message 4 could contain the missing identification data, and this identification could be suppressed by the display until message 9 is received. Similarly, the details of the vendor need not be included in message 6 to the purchaser, preferably being contained, instead, in message 8, or they could be included in message 6 and suppressed until receipt of message 8.

When clients or counterparties are identified to each other at an early stage, subsequent communication, if desired, can be made directly between the counterparties and need not be through the host 200. However, in such an instance, full records of transactions in all stages cannot then normally be made at the host 200, although the resultant direct communication further reduces the chance of transmission failure.

Referring now to Fig. 8, the improved matching system of the present invention shall be described in further detail as a specific improvement on the anonymous matching system described in U.S. Serial No. 357,748 the contents of which has

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been specifically incorporated by reference herein in their entirety. As shown and preferred in Fig. 8, the transaction desk or T-desk utilized in the anonymous trading system of the above application for risk management has been eliminated and replaced by the improved system of the present invention in which timers 300, 302 are located, by way of example, at the individual client keystations KS A, KS B, respectively, for timing receipt of the "confirmed trade" message and/or ticket generation message from the host 200 in order to generate an alarm condition and display trade status on displays 202, 204, respectively, when the "confirmed trade" message is not timely received within a predetermined period, such as the 15 second time period given by way of example in the discussion of Fig. 1, as well as an unconfirmed trade "status message pending confirmation," or a "late confirmed trade" status message for trades confirmed after this predetermined time period. In addition, the system of Fig. 8 includes the provision of the optional timer 304 at the central host 200 for timing receipt of match acknowledgement signals from the respective keystations KS A, KS B within a predetermined period, such as the 60 second time period given by way of example in the above discussion of Fig. 1. Preferably, in the improved matching system illustrated in Fig. 8, a trading ticket is not released by the host 200 until the host 200 has received the match acknowledgement messages or MATCH-ACK for that match or trade from the counterparties to the trade which, in the example of

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Figs. 1 and 8, are keystations KS A and KS B. As shown and
preferred in the example of Fig. 8, keystation A or KS A is
considered the transaction originating keystation which, in
this example, submits a transaction called "bid" to the central
host 200, which bid is sent as a "bid notification" anonymously
to all keystations in the system at this point and as a "bid
acknowledgment" to KS A. Assuming keystation B or KS B has
submits an offer at that price to the central host 200, the
central host will recognize that a match is now possible and,
assuming that the predetermined matching criteria have been
met, such as quantity and gross counterparty credit limit, by
way of example, the host 200 will then create a match which is
not yet confirmed by the counterparties to the trade and will
transmit a "match notification" message to the counterparties
involved in the match, such as KS A and KS B in the above
example. Upon receipt of the match notification message from
the host 200, the respective keystation KS A and/or KS B
automatically transmits a match acknowledgement message or
MATCH-ACK back to the host 200 and the respective timer, 300,
302, respectively starts timing the elapsed time between
transmission of the MATCH-ACK message and receipt back of a
"confirmed trade" and/or ticket generation message from the
host 200 which should occur within the previously set
predetermined time period, such as the 15 seconds given in the
above example. Preferably, assuming the host 200 receives the

MATCH-ACK messages from all counterparties to the trade, KS A and KS B, it will automatically transmit both "the confirmed trade" message and a ticket generation message to the counterparties which will cause the display 202, 204 to display a "confirmed trade" or a "done" message next to the particular transaction, as well as printing of the corresponding trade ticket by the associated conventional trade ticket printer 306, 308. If, however, the "confirmed trade" and/or ticket generation message is not timely received by the particular counterparty, keystation KS A or KS B in this example, within this predetermined period, then preferably a warning message is displayed on the appropriate display 202, 204 and, if desired, an audible alarm may be sounded at the conventional keyboard 310, 312 used to input data at the respective keystation KS A, KS B, respectively. However, preferably, if the "confirmed trade" message and/or ticket generation message is subsequently received by the keystation KS A or KS B after this predetermined period, such as due to a delay in transmission somewhere in the system, then the trade status message display at the keystation will subsequently display a "late confirmed trade" message, although the warning will have first sounded and/or been displayed at the end of the predetermined interval. Since the timers 300, 302 basically also control the trade status display on the keystation displays 202, 204 in response to changes in the trade status over time, these timers 300, 302 are in effect trade status timers.

As was previously mentioned, the timer 304 at the host 200, times the receipt of the match acknowledgement or MATCH-ACK messages from the counterparty keystations so that if all of the MATCH-ACK messages are not received with a predetermined period after the match has occurred, such as the previously mentioned 60 second period in the above example, no ticket for the match and/or no "confirmed trade" message will be transmitted from the host 200 and the trade will remain in the "unconfirmed" state, and, if desired, an alarm condition will be provided at the host 200.

It should be understood that once the improved procedures employed in the above system are understood, based on the foregoing description, the implementation of these improved procedures in accordance with the message flow diagrams of FIGS. 2-7 will be readily understood by one of ordinary skill in the art and need not be described in further detail hereinafter. Suffice it to say, that by eliminating the transaction desk and placing conventional timing lapse circuitry 300, 302 at the individual keystations KS A, KS B, risk management in an anonymous trading system is significantly enhanced over the type of approach employed in the aforementioned U.S. patent application Serial No. 357,748.

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WHAT IS CLAIMED IS:

1. In a matching system for trading instruments in
which bids for said trading instruments are automatically
matched against offers for given trading instruments for
automatically providing matching transactions in order to
provide confirmed trades for said given trading instruments,
said system comprising a host computer means for matching like
bids and offers provided thereto in accordance with a
predetermined matching criteria, a transaction originating
keystation means for providing a bid on a given trading
instrument to said system for providing a potential matching
transaction, a counterparty keystation means for providing an
offer on said given trading instrument involved in said
potential matching transaction, and network means for
interconnecting said host computer means, said transaction
originating keystation means, and said counterparty keystation
means in said system for enabling data communications
therebetween; the improvement comprising match notification
data message generation means for providing a match
notification data message to said transaction originating
keystation means and said counterparty keystation means via
said network means in response to the occurrence of a matching
transaction at said host computer means, said host computer
means comprising said match notification data message
generation means, said match notification data message

comprising an unconfirmed matching transaction for said given
trading instrument; and match acknowledgement data message
generation means disposed at each of said keystation means for
respectively providing a match acknowledgement data message to
said host computer means via said network means in response to
receipt of said match notification data message by said
transaction originating keystation means and said counterparty
keystation means, respectively; said host computer means
further comprising confirmed trade data message generation
means for providing a confirmed trade data message to said
transaction originating keystation means and said counterparty
keystation means via said network means in response to receipt
of said match acknowledgement data messages from both said
transaction originating keystation means and said counterparty
keystation means; said transaction originating keystation means
and said counterparty keystation means each further comprising
trade status timing means for timing receipt of said confirmed
trade data message by said respective keystation means for
providing a trade status display at said respective keystation
means based on said timed receipt of said confirmed trade data
message; whereby the occurrence of automatically confirmed
trades is dependent on match acknowledgement from all
counterparties to the matching trade.

2. An improved matching system in accordance with claim 1 wherein said trade status timing means further comprises means for timing receipt of said confirmed trade data message by said respective keystation means in response to provision of said match acknowledgement data message from said respective keystation means.

3. An improved matching system in accordance with claim 2 wherein said trade status timing means further comprises means for timing receipt of said confirmed trade data message by said respective keystation means for providing a confirmed trade status display in response to receipt of said confirmed trade data message by said respective keystation means within a predetermined time interval.

4. An improved matching system in accordance with claim 1 wherein said trade status timing means further comprises means for timing receipt of said confirmed trade data message by said respective keystation means for providing a confirmed trade status display in response to receipt of said confirmed trade data message by said respective keystation means within a predetermined time interval.

5. An improved matching system in accordance with claim 4 wherein said trade status timing means further comprises means for providing an unconfirmed trade status display during said predetermined time interval.

6. An improved matching system in accordance with claim 5 wherein said trade status timing means further comprises alarm means for providing an alarm condition for said respective keystation means when said confirmed trade data message is not received within said predetermined time interval.

7. An improved matching system in accordance with claim 6 wherein said trade status timing means further comprises means for providing a late confirmed trade status display in response to receipt of said confirmed trade data message after said predetermined time interval.

8. An improved matching system in accordance with claim 7 wherein said trade status timing means further comprises means for timing receipt of said confirmed trade data message by said respective keystation means in response to provision of said match acknowledgement data message from said respective keystation means.

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9. An improved matching system in accordance with claim 8 wherein said trade status timing means further comprises message display means for displaying said trade status display at said respective keystation means.

10. An improved matching system in accordance with claim 9 wherein said trading instruments comprise financial trading instruments.

11. An improved matching system in accordance with claim 1 wherein said trade status timing means further comprises alarm means for providing an alarm condition for said respective keystation means when said confirmed trade data message is not received within a predetermined time interval.

12. An improved matching system in accordance with claim 11 wherein said trade status timing means further comprises means for timing receipt of said confirmed trade data message by said respective keystation means in response to provision of said match acknowledgement data message from said respective keystation means.

13. An improved matching system in accordance with claim 12 wherein said trade status timing means further comprises means for timing receipt of said confirmed trade data message by said respective keystation means for providing a confirmed trade status display in response to receipt of said confirmed trade data message by said respective keystation within said predetermined time interval.

14. An improved matching system in accordance with claim 13 wherein said trade status timing means further comprises means for providing an unconfirmed trade status display during said predetermined time interval.

15. An improved matching system in accordance with claim 14 wherein said trade status timing means further comprises means for providing a late confirmed trade status display in response to receipt of said confirmed trade data message after said predetermined time interval.

16. An improved matching system in accordance with claim 5 wherein said trade status timing means further comprises means for timing receipt of said confirmed trade data message by said respective keystation means in response to provision of said match acknowledgement data message from said respective keystation means.

17. An improved matching system in accordance with claim 1 wherein said trade status timing means further comprises message display means for displaying said trade status display at said respective keystation means.

18. An improved matching system in accordance with claim 17 wherein said trade status timing means further comprises means for timing receipt of said confirmed trade data message by said respective keystation means in response to provision of said match acknowledgement data message from said respective keystation means.

19. An improved matching system in accordance with claim 18 said trade status timing means further comprises alarm means for providing an alarm condition for said respective keystation means when said confirmed trade data message is not received within said predetermined time interval.

20. An improved matching system in accordance with claim 1 wherein said trading instruments comprise financial trading instruments.

21. An improved matching system in accordance with
claim 1 wherein said confirmed trade data message generation
means further comprises trading ticket data generation means,
each of said keystation means further comprising means
responsive to receipt of a trading ticket data message from
said trading ticket data generation means for automatically
providing a trading ticket corresponding to said confirmed
trade.

22. An improved matching system in accordance with
claim 21 wherein said trade status timing means further
comprises means for timing receipt of said confirmed trade data
message by said respective keystation means in response to
provision of said match acknowledgement data message from said
respective keystation means.

23. An improved matching system in accordance with
claim 22 wherein said trade status timing means further
comprises alarm means for providing an alarm condition for said
respective keystation means when said confirmed trade data
message is not received within a predetermined interval.

24. An improved matching system in accordance with claim 23 wherein said host computer means further comprises alarm means for timing receipt of said match acknowledgement data message from said counterparty keystation means for providing an alert condition data message to said transaction originating keystation means when said match acknowledgement data message is not received from said counterparty keystation means within a predetermined time interval, said transaction originating keystation means alarm means further comprising means responsive to receipt of said alert condition data message for providing an alarm condition for said transaction originating keystation means.

25. An improved matching system in accordance with claim 1 wherein said host computer means further comprises alarm means for timing receipt of said match acknowledgement data message from said counterparty keystation means for providing an alert condition data message to said transaction originating keystation means when said match acknowledgement data message is not received from said counterparty keystation means within a predetermined time interval.

26. An improved matching system in accordance with claim 25 wherein said trade status timing means further comprises alarm means for providing an alarm condition for said respective keystation means when said confirmed trade data message is not received within a predetermined interval.

27. An improved matching system in accordance with claim 26 wherein said transaction originating keystation means alarm means further comprises means responsive to receipt of said alert condition data message for providing an alarm condition for said transaction originating keystation means.

28. An improved matching system in accordance with claim 1 wherein each of said keystation means further comprises store and print means for storing and printing received messages and their status.

29. An improved matching system in accordance with claim 28 wherein said trade status timing means further comprises alarm means for providing an alarm condition for said respective keystation means when said confirmed trade data message is not received within a predetermined time interval.

30. An improved matching system in accordance with claim 1 wherein each of said keystation means further comprises storage means for storing an initial data message, said match acknowledgement data message generation means comprising means for acknowledging said initial message after storage thereof.

31. An improved matching system in accordance with claim 30 wherein said trade status timing means further comprises alarm means for providing an alarm condition for said respective keystation means when said confirmed trade data message is not received within a predetermined time interval.

32. In an offer matching system comprising a host station, a plurality of client stations respectively connected to the host station by a communication link, said host station comprising means for matching bids and offers provided to said host station by said client stations; the improvement comprising a timer device at each of said client station means 6 for acknowledging trading messages received at one of said client stations, said timer device being started in response to a first trading message at said one client station; and an alarm at said one client station responsive to said timer device continuing beyond a predetermined time.

33. A system as claimed in claim 32 wherein said first
trading message is a trading message received from another
client station in response to an offer made from said one
client station.

34. A system as claimed in claim 32 wherein said first
trading message is a trading message from said one client
station acknowledging a trading message received from another
client station.

35. A system as claimed in claim 32 wherein said one
client station comprises a status indicator, said status
indicator being responsive to the timing out of said timer
device to indicate 'unconfirmed' status and being set to
'confirmed' status by the receipt of said second trading
message at said one client station.

36. A system as claimed in claim 33 wherein said one
client station comprises a status indicator, said status
indicator being responsive to the timing out of said timer
device to indicate 'unconfirmed' status and being set to
'confirmed' status by the receipt of said second trading
message at said one client station.

37. A system as claimed in claim 34 wherein said one client station comprises a status indicator, said status indicator being responsive to the timing out of said timer device to indicate 'unconfirmed' status and being set to 'confirmed' status by the receipt of said second trading message at said one client station.

38. A system as claimed in claim 35 wherein said one client station comprises an alarm operable in response to said unconfirmed status.

39. A system as claimed in claim 38 wherein said one client station comprises a store and print device to store and print received messages and their status.

40. A system as claimed in claim 32 wherein said one client station comprises a store and print device to store and print received messages and their status.

41. A system as claimed in claim 32 wherein said one client station comprises a store to store an initial message, said acknowledgement means being arranged to acknowledge said initial message after storage thereof.

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42. A system as claimed in claim 32 wherein said host station comprises a timer operable in response to a message received from a client station and re-settable in response to a message received from an associated client station.

Abstract of the Disclosure

An improved matching system for trading instruments in which the occurrence of automatically confirmed trades is dependent on receipt of match acknowledgement messages by the host computer (200) from all counterparties (KS A, KS B) to the matching trade. The host computer (200) matches like bids and offers provided thereto by the various keystations (KS A, KS B) in accordance with a predetermined matching criteria. Each of the keystations (KS A, KS B) includes a trade status timer (300, 302) and a display (310, 312) for timing receipt of a confirmed trade and/or ticket generation message from the host (200) after the keystation (KS A, KS B) has sent a match acknowledgement message and for displaying an "unconfirmed trade" status message awaiting receipt of the "confirmed trade" indication from the host (200). An alarm and a display message is provided at the keystation (KS A, KS B) when the "confirmed trade" indication is not timely received. The host (200) receives match acknowledgement messages from all of the counterparties (KS A, KS B) to the match before confirming a trade. A ticket is not generated at the keystation (KS A, KS B) until the trade has been confirmed by the host (200).

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FIG.1
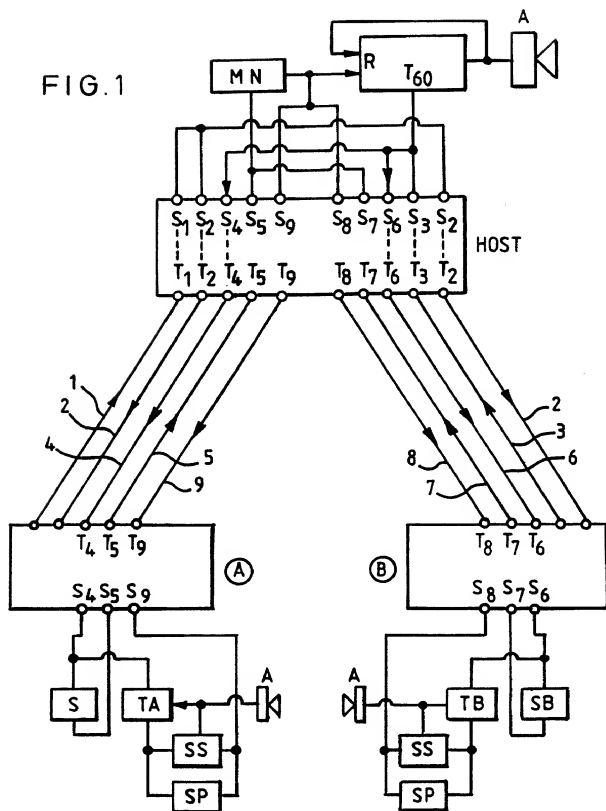
ACF Flow Diagram for Client Site

For each match notification that arrives:

```
        ( START )
            │
   ┌────────▼────────┐
   │ START TIMER (TN) │
   └────────┬────────┘
            │
 ┌──────────▼──────────┐
 │ STORE UNCONFIRMED    │
 │ MATCH NOTIFICATION   │
 └──────────┬──────────┘
            │
 ┌──────────▼──────────┐
 │ SEND ACKNOWLEDGEMENT │
 │    BACK TO HOST      │
 └──────────┬──────────┘
            │
        (  END  )
```
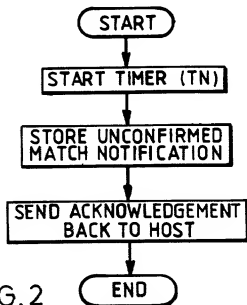
FIG.2

If Tn for any notification exceeds 15 seconds:

```
        ( START )
            │
     ┌──────▼──────┐
     │ ALERT USER  │
     └──────┬──────┘
            │
   ┌────────▼────────┐
   │ STORE AND PRINT  │
   │    DETAILS       │
   └────────┬────────┘
            │
 ┌──────────▼───────────┐
 │ SET STATUS FOR MATCH  │
 │ NOTIFICATION (Sn) AS  │
 │       ALERTED         │
 └──────────┬───────────┘
            │
     ┌──────▼──────┐
     │ CANCEL TIMER │
     └──────┬──────┘
            │
        (  END  )
```
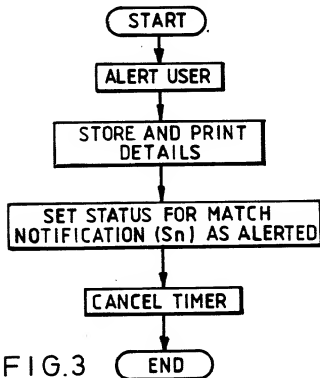
FIG.3

When a match confirmation message (the ticket) arrives :

START

FIND CORRESPONDING MATCH NOTIFICATION

IS THE STATUS (Su) SET AS ALERTED ?

NO

1. INFORM USER THAT A CONFIRMATION HAS ARRIVED
2. STOP AND CANCEL TIMER

YES

1. INFORM USER THAT A LATE CONFIRMATION HAS ARRIVED

STORE AND PRINT TICKET

FIG. 4   **END**
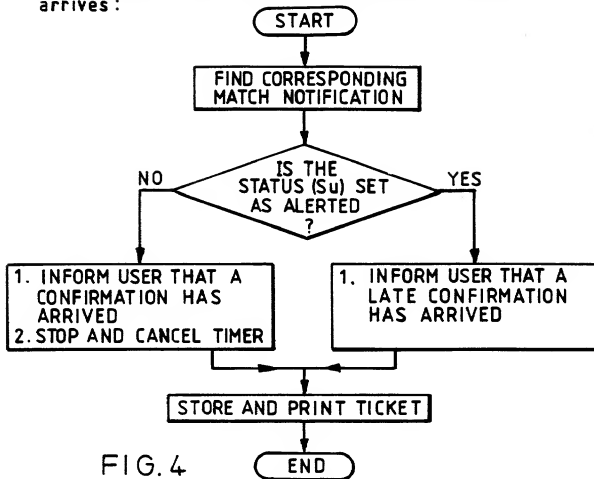
ACF Flow Diagrams for Host Site

When a match is made at the host :-

START

START TIMER Tm

1. SEND MATCH NOTIFICATION TO PARTY 1
2. SEND MATCH NOTIFICATION TO PARTY 2

FIG. 5   **END**
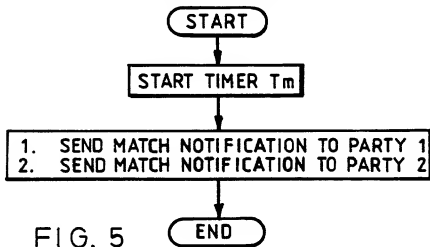
When a Match Acknowledgement Arrives Back From a
Client Site

```
        ( START )
            |
  ┌──────────────────────┐
  │ FIND CORRESPONDING   │
  │  MATCH NOTIFICATION  │
  └──────────────────────┘
            |
```

```
                  IS  ACK
       NO      STATUS FLAG SET      YES
              FOR THAT MATCH
               NOTIFICATION
```

NO branch:
```
  ┌──────────────┐
  │   SET ACK    │
  │ STATUS FLAG  │
  └──────────────┘
        |
     ( END )
```

YES branch:
```
  ┌──────────────────┐
  │ STOP AND CANCEL  │
  │    TIMER  Tm     │
  └──────────────────┘
          |
  ┌──────────────────┐
  │ DECLARE MATCH AS │
  │  ACKNOWLEDGED    │
  │     AT HOST      │
  └──────────────────┘
          |
  ┌────────────────────┐
  │ SEND CONFIRMATION  │
  │ MESSAGE (TICKET)   │
  │ TO PARTY 1 AND 2   │
  └────────────────────┘
          |
       ( END )
```

FIG.6

If Tm Exceeds 60 Seconds :-

```
        ( START )
            |
  ┌──────────────┐
  │ CANCEL TIMER │
  └──────────────┘
            |
  ┌──────────────────┐
  │ DECLARE MATCH    │
  │ UNACKNOWLEDGED   │
  │    AT HOST       │
  └──────────────────┘
            |
         ( END )
```
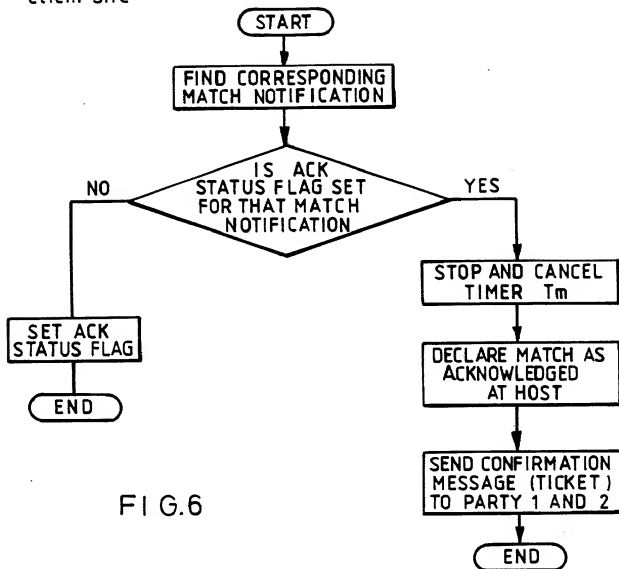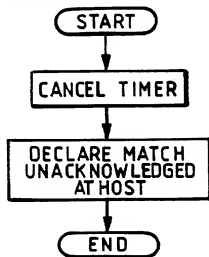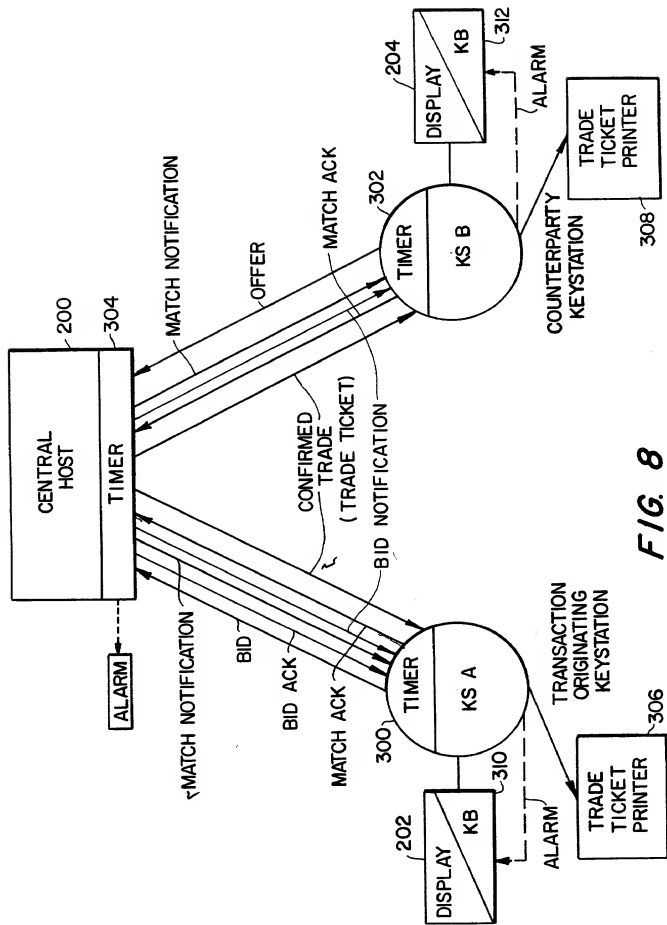
FIG. 7

FIG. 8

DECLARATION AND POWER OF ATTORNEY
FOR UTILITY PATENT APPLICATION - JOINT

As the below named inventors, we hereby declare that:

Our residences, post office addresses, and citizenships are as stated below next to our names.

We believe that we are the original, first, and joint inventors of the subject matter which is claimed and for which a patent is sought on the invention entitled OFFER MATCHING SYSTEM, the specification of which is attached hereto.

We hereby state that we reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

We acknowledge the duty to disclose information that is material to the examination of this application in accordance with 37 Code of Federal Regulations § 1.56.

We hereby claim foreign priority benefits under 35 United States Code §§ 119 and 365 of any foreign application(s) for the patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Applications: British Patent Application No. 9027249.3, filed December 17, 1990 and British Patent Application No. 9104121.0, filed February 27, 1991, and European Patent Application No. 91306146.1, filed July 5, 1991.

We hereby appoint the following attorneys to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith:

Lawrence G. Kurland, Reg. No. 24,895; Maurice B. Stiefel, Reg. No. 18,479; Marc S. Gross, Reg. No. 19,614; Stephen P. Gilbert, Reg. No. 27,893; Elizabeth M. Barnhard, Reg. No. 31,088, Philip T. Strassburger, Reg. No. 34,258, and Mark E. Waddell, Reg. No. 31,803.

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New York, New York 10167-0034

We hereby declare that all statements made herein of our own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full Name of First Inventor: CHRISTOPHER J. ORDISH

Inventor's signature: _____

Date: _____

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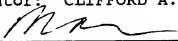   England

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Full Name of Third Joint Inventor: CLIFFORD A. MACKENZIE:

Inventor's signature: _____ *Mr.* _____

Date: _____ 29 OCTOBER 1991 _____

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DECLARATION AND POWER OF ATTORNEY
FOR UTILITY PATENT APPLICATION - JOINT

As the below named inventors, we hereby declare that:

Our residences, post office addresses, and citizenships are as stated below next to our names.

We believe that we are the original, first, and joint inventors of the subject matter which is claimed and for which a patent is sought on the invention entitled OFFER MATCHING system, the specification of which is attached hereto.

We hereby state that we reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

We acknowledge the duty to disclose information that is material to the examination of this application in accordance with 37 Code of Federal Regulations § 1.56.

We hereby claim foreign priority benefits under 35 United States Code §§ 119 and 365 of any foreign application(s) for the patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Applications: British Patent Application No. 9027249.3, filed December 17, 1990 and British Patent Application No. 9104121.0, filed February 27, 1991., and European Patent Application No. 91306146.1, filed July 5 1991.

We hereby appoint the following attorneys to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith:

Lawrence G. Kurland, Reg. No. 24,895; Maurice B. Stiefel, Reg. No. 18,479; Marc S. Gross, Reg. No. 19,614; Stephen P. Gilbert, Reg. No. 27,893; Elizabeth M. Barnhard, Reg. No. 31,088, Philip T. Strassburger, Reg. No. 34,258, and Mark E. Waddell, Reg. No. 31,803.

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Address all correspondence to:
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We hereby declare that all statements made herein of our own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full Name of First Inventor: CHRISTOPHER J. ORDISH

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Full Name of Third Joint Inventor: CLIFFORD A. MACKENZIE:

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